Kaiko Indices

Kaiko Safello Staked Indices

Rulebook

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www.kaiko.com/indices

About Kaiko Indices

Kaiko Indices offers institutional-grade benchmarks and indices, setting the standard for reliability and transparency in the digital asset market. As a regulated Benchmark Administrator under the EU BMR framework and compliant with IOSCO principles, we empower exchanges, asset managers, and financial institutions with trusted data solutions that support robust settlement and risk management practices.

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1. Introduction

Over the past decade, the cryptocurrency market has grown exponentially, attracting a diverse range of investors seeking innovative opportunities beyond traditional financial instruments. In this rapidly evolving digital asset landscape, Kaiko has established itself as a pioneer, providing comprehensive cryptocurrency data—from trades on centralized and decentralized exchanges to advanced analytical metrics.

As digital assets mature into a recognized and investable asset class, the demand for reliable, rules-based, and transparent benchmarks has become essential. Investors increasingly seek comprehensive market coverage and a structured segmentation framework to better understand and capitalize on market trends.

Kaiko Indices offers a robust framework for measuring and tracking the performance of the digital asset market, leveraging institutional-grade methodologies for index construction. Designed to meet the evolving needs of investors, Kaiko Indices ensures broad market coverage, precise classification, and a transparent governance structure.

Kaiko Indices' approach to index design is built on four fundamental principles:

Transparency

Kaiko Indices is committed to maintaining a clear and objective methodology, ensuring market participants have full visibility into index construction, data sources, and governance. Our methodologies are publicly available, allowing investors to understand the calculation processes and ensure alignment with industry best practices.

Investability

Kaiko Indices products are designed to be investable and replicable, enabling the creation of financial products that accurately reflect market trends. Through a rigorous asset vetting process incorporating liquidity and size filters, our indices ensure that constituents are both representative of the market and readily accessible for trading.

Innovation

Kaiko Indices continuously innovates by expanding its offerings and integrating cutting-edge methodologies to ensure its indices remain robust, relevant, and aligned with market trends. The Kaiko Indices product suite remains dynamic and forward-thinking, empowering investors to capitalize on the latest opportunities in the digital asset ecosystem.

Governance

Kaiko Indices adheres to a robust governance framework, with periodic methodology reviews, structured oversight, and predefined processes to ensure index integrity. All indices undergo regular maintenance and rebalancing to reflect market conditions while maintaining stability and consistency over time.

This document outlines the principles, policies, and procedures governing the construction and maintenance of Kaiko Staked Indices. It provides a detailed framework for index methodology, including staking yield computation, utilization rate & staking period criteria, calculation methodology, and governance processes. Unless explicitly stated otherwise, these guidelines apply to all Staked Indices within the Kaiko Investable Universe.

2. Data Sources

2.1. Price Data

Data Provider: Kaiko

Founded in 2014, Kaiko is the leading provider of cryptocurrency market data, analytics, and indices, offering businesses institutional-grade, regulatory-compliant solutions. Kaiko empowers market participants with global connectivity to real-time and historical data feeds across the world's leading exchanges.

Coverage

Kaiko covers more than a hundred digital assets exchanges and 10,000 pairs globally. It operates an institutional grade technical stack with storage and collection run on redundant, geographically dispersed servers. Kaiko's unbiased data is used for trading, research, valuation and/or display purposes, with major market participants.

Kaiko Benchmark Reference Rates & Kaiko Reference Rates

Kaiko Indices will use the suite of Benchmark Reference Rates and Reference Rates for the purposes of calculating the Indices. Designed to bring greater transparency to pricing, these are rules-based and independent rates established from executed trades from centralised exchanges. Each Reference Rate is calculated real-time (every 5 seconds), as well as being published as a daily fixing covering three different time zones: London 16:00 UTC, Singapore 08:00 UTC, New York 20:00 UTC. For more detailed information, please refer to section 3.1.1.

2.2. Staking Data

Coverage

Kaiko covers all major digital assets that include staking features. These assets span multiple blockchain ecosystems, offering institutional-grade staking yield data for accurate benchmarking and analysis. Kaiko's data infrastructure ensures high availability, providing comprehensive insights into staking rewards across leading networks.

Staking Yield Rates

Kaiko's staking yield rates leverage a transparent, rules-based methodology to capture and present staking rewards data. Kaiko calculates staking yield reference rates as Annual Percentage Rate (APR), the methodology includes anomaly detection and median-based calculations to mitigate outliers and maintain accuracy.

3. Index Construction

3.1. Index Underlying Components

3.1.1. Price Reference Rate

Kaiko Indices calculates its indices using prices derived from its suite of Reference Rates and Benchmark Reference Rates. These rates serve as the underlying components, and their prices are incorporated into the computation of the Index Value. To ensure accuracy and reliability, a rigorous exchange selection process and a robust price aggregation methodology are applied, as outlined in the Reference Rates methodology:

Exchange Due Diligence

All centralized exchanges are thoroughly evaluated, and only those that meet rigorous reliability and transparency standards are included in the hard-vetted exchange list. This list is reviewed on a quarterly basis, with exchanges categorized into two tiers based on their compliance with predefined vetting criteria. The composition of Benchmark Reference Rates is derived from the hard-vetted exchanges, ensuring adherence to strict reliability and transparency standards. In contrast, Reference Rates incorporate data from exchanges that meet fundamental eligibility criteria, providing a broader yet systematically screened dataset.

Criteria	Basic Vetting	Hard Vetting
Absent from any sanction list	Yes	Yes
Located in stable and open country	-	Yes
Has been operating for the past	-	5 Years
Regulated by an independent government body	-	Yes
KYC/AML controls	-	Strong
Trading Policies	-	Significant
Offers REST API & WebSocket data feeds	-	Yes
Offers live & historical trade data	-	Yes
Provide cold storage for customers funds	-	Yes

Liquidity Optimization

From the curated exchange list, an optimization process selects the most relevant exchanges to maximize liquidity and offer accurate price discovery.

Robust Aggregation Method

A Volume-Weighted Median combined with a Time-Weighted Average Price (TWAP) methodology is applied to derive fair and representative prices based on executed transactions from the selected exchanges.

Quarterly Reviews

The exchange constituents and calculation window of the Reference Rates are reviewed quarterly to ensure alignment with prevailing market conditions.

Buffering Rules

For Benchmark Reference Rates, buffering mechanisms are implemented to minimize unnecessary parameters turnover during rebalancing, thereby maximizing liquidity coverage and maintaining methodological consistency.

3. Index Construction

3.1. Index Underlying Components

3.1.2. Staking Yield Rate

Kaiko Indices calculates its staking yield indices using yield data derived from its suite of Staking Yield Reference Rates. These rates serve as the foundational components, ensuring a transparent and standardized measure of staking yields across multiple digital assets. To ensure accuracy and reliability a robust yield aggregation methodology is applied.

Staking Data Sources

All staking data providers undergo a stringent evaluation process, ensuring that only reliable, transparent, and verifiable sources contribute to the index. Staking providers data comes from entities or Decentralized Autonomous Organizations (DAOs) offering validator services, presenting a blend of direct and managed staking services.

Yield Aggregation Method

A Median-Based Aggregation Approach is applied to derive fair and representative staking yield rates. This methodology ensures resilience against outliers and sudden yield fluctuations. Abnormal or stale yield values are identified and removed using an anomaly detection system. The final staking yield rate for each asset is determined by selecting the median yield value from the vetted providers.

TAO Yield calculation

A custom methodology is adopted for TAO asset due to the unique nature of the Bittensor protocol. Specifically, the TAO APR is computed daily as weighted average of APRs from all root TAO validators.

3. Index Construction

3.2. Staked Index Methodology

3.2.1. Index Description

Staked Indices are designed to measure the comprehensive performance of digital assets that utilize Proof-of-Stake (PoS) consensus mechanisms, capturing both price movements and staking rewards. These indices provide investors with a complete view of the potential returns available in the PoS digital asset ecosystem, reflecting the combined impact of asset appreciation and network participation through staking.

3.2.2. Methodology Overview

Each Staked Index tracks two key components:

- **Price Return:** The change in market value of the underlying digital asset as measured by Kaiko's Reference Rates or Benchmark Reference Rates.
- **Staking Rewards:** The additional yield generated through staking activities on the respective blockchain networks, with rewards calculated based on network-specific parameters and settlement periods.

The indices use a quantity-adjusted methodology where the asset quantity held in the index increases over time to reflect accrued staking rewards. This approach provides a realistic representation of an investment strategy that stakes digital assets and periodically reinvests the rewards on the rebalancing dates.

3.2.3. Utilization Rate & Unstaking Period

Staked products include two additional parameters that can be used in the calculations.

- **Utilization Rate:** The utilization rate represents the proportion of staked assets actively engaged in securing the network relative to the total supply. For an index provider, this metric ensures an accurate representation of the quantity of assets effectively staked within the product.
- **Unstaking Period:** The unstaking period represents the mandatory time period to unstake assets from the network. In the context of a multi-asset index product, the unstaking period is used to temporarily set the utilization rate to 0 ahead of rebalancing. Once the rebalancing process is complete, the utilization rate is re-adjusted to its initial value.

3.2.4. Rebalancing Schedule

Staked Indices undertake regular index reviews of their underlying constituents according to the frequency stated on individual index methodology and following the standards defined in the rebalancing calendar.

4. Index Calculation

4.1. Step-by-Step Methodology

Index Initialization

- **Base Date and Value:** The index is assigned a base date and initialized with a predefined base value.
- **Initial Quantity:** The initial asset quantity is determined based on the index's initial value and asset prices at the base date.
- **Initial Multiplier:** The starting multiplier is set to ensure the index begins at the designated base value.

Index Calculation

- **Asset Price:** Reference prices are collected at the calculation time, with validations applied to ensure data integrity.
- **Daily Staking Yield:** The daily staking yield is determined by computing the median of collected yields from selected staking providers, expressed as a daily rate.
- **Utilization Rate:** The utilization rate is applied based on the staking period, whether during standard publication, pre-rebalancing, or post-rebalancing phases.
- **Asset Quantity:** Asset quantities are updated to reflect accrued staking rewards based on the most recent rebalance quantity.
- **Index Value:** The index value is computed using the updated asset quantities and reference prices.

Index Rebalancing

- **Pre-Rebalancing Preparation:** Ahead of rebalancing, the unstaking process is initiated by progressively reducing the utilization rate, while staking rewards continue accruing on the decreasing staked portion.
- **Rebalancing Execution:** On the effective rebalancing date, new asset quantities are calculated based on current prices.
- **Post-Rebalancing Implementation:** The staking process is resumed, increasing the utilization rate to the target level. Staking rewards begin accumulating on the growing staked portion, and the reference rebalance quantity is reset.

4. Index Calculation

4.2. Index Aggregation

4.2.1. Inputs

Symbol	Name	Description
t	**Events**	The timestamp at which the index is calculated
Ref^i_t	**Reference Price**	Reference Price for asset *i* at time *t*
Y^i_t	**Staking Yield**	Daily staking yield for asset *i* at time *t*
U^i_t	**Utilization Rate**	Proportion of holdings of asset *i* that is staked at time *t*
Q^i_t	**Asset Quantity**	Quantity of asset *i* held in the index at time *t*
Q^i_R	**Rebalancing Quantity**	Quantity of asset *i* at the most recent rebalancing date *R*
M	**Multiplier**	Multiplier of the index applied at the base date.
$Index_t$	**Index Price**	Index Price at time *t*

4.2.2. Index Formula

Daily Quantity Update

Between two consecutive calculation days *t-1* and *t*, the quantity of each asset *i* evolves according to the staking rewards accrued:

$$Q^i_t = Q^i_{t-1} + Y^i_t . Q^i_R . U^i_t$$

Index Value Calculation

The Staked Index value on day *t*, is calculated as:

$$Index_t = M \sum_i (Q^i_t \cdot Ref^i_t)$$

On rebalancing dates, the quantity are adjusted according to the rebalancing weights and to the last index values, ensuring index continuity.

4.2.3. Computation Specificities

To ensure robustness and reliability, the index computation follows strict rules to handle various market events and data anomalies:

Base value — Base value of the index

Rounding — All rates are calculated with all available decimals

Blockchain forks — In the event of a blockchain fork, the ticker of the affected underlying assets may be adjusted to reflect the most relevant instrument.

Delayed & missing data — At the time of the calculation (t), some underlying components may be delayed or unavailable. To ensure index continuity, a Fixed Indices Publication Buffer is applied before the computation of the index value. If any required underlying component is missing after this buffer period, the index value is not computed.

Spurious data — If for any reason any underlying price is identified as potentially suspect within an index composition, the index value is not computed.

5. Publication & Review

5.1. Publication Events

Each index follows a structured publication framework to ensure consistency and accuracy. Staked Indices have only one type of publication events: fixing publications. The underlying components of the indices adhere to standardized methodologies, with specific aggregation parameters reviewed quarterly to maintain minimum liquidity coverage and market price representativity. For more details on the rates, publication and parameters, please refer to section 3.1.1.

5.1.1. Fixing Publications

Fixing publications are scheduled recurring events that occur at a granularity slower than a minute, typically aligning with key market closing times. These fixing events are assumed to take place daily on a specific financial time zone: EMEA. To mitigate incomplete index aggregation due to potential underlying price unavailability, an Indices Publication Buffer is applied before computing the index value.

- Publication interval: 1 day
- Indices Publication Buffer: 15 min

Staked Indices daily fixings:

- Europe - London time - 16:15 UTC

5. Publication & Review

5.2. Scheduled Review and Rebalancing

Rebalancing is a time-driven process designed to ensure that indices remain aligned with market dynamics while adhering to selection and construction rules, which are further detailed in section 3. Index Construction. In the case of Staked Indices rebalancing ensures that all collected staking rewards are included into the staked quantities.

All indices follow a Scheduled Review Scheme executed monthly after the publication of the last business day of the month. During rebalancing the staked quantities set to be the total token quantit multiplied by the utilization rate.

Scheduled Review Scheme

Step 1 – Cut-off date
Last business day of the current month.
Data collection stops.

Step 2 – Rebalancing date
Last business day of the current month.
Rebalance is executed, adjusting the staking quantities.

Step 2 – Effective date
First business day of the next month.
New staked quantities are implemented and effective

5. Publication & Review

5.3. Extraordinary Review

Kaiko Indices reserves the right, based on its qualified expert judgment, to exclude or replace an asset selected during the Scheduled Review. Such an extraordinary action may be taken if the asset is found to be subject to any of the following exclusion criteria:

- Fraud
- Market manipulation
- Significant loss of volume or liquidity

In such cases, the Kaiko Index Administration Committee will publish its findings, and the asset will be excluded from index calculations two days after the initial public communication.

Scheduled Review Scheme

Step 1 – Event
Anytime between ordinary reviews
Identification by the Kaiko Indices team of an exclusion action.

Step 2 – Public communication
Within the next 24 hours
Kaiko Indices Administration Committee publish its findings and asset exclusion if recommended.

Step 2 – Effective date
3 days later
The Index Administration Committee recommendation is effective

6. Index Governance

6.1. Committee Oversight

Kaiko Indices has established a robust governance framework structured around dedicated committees overseeing index operations, administration, and benchmark oversight. These committees comprise representatives from across Kaiko, including Kaiko Indices, with each member focusing on key oversight areas such as risk, compliance, methodology governance, and data sufficiency.

This structured approach ensures that decisions are not made unilaterally, but rather through rigorous challenge and discussion, considering all relevant factors before finalization. The committees operate in strict adherence to Kaiko Indices' methodologies and policies, reinforcing the integrity, transparency, and robustness of the indices.

6.2. Expert Judgment

Kaiko Indices is committed to ensuring that all index-related decisions are driven by predefined methodologies and policies, minimizing the risk of inconsistent or discretionary decision-making. However, in complex market conditions, certain situations may require the application of expert judgment. Where practicable, such decisions are escalated to the relevant governance committee, with all instances documented and reviewed by the Oversight Committee to ensure transparency and consistency. If a judgment-based decision arises in a scenario not explicitly covered by the methodology, Kaiko Indices will publicly disclose the details of the decision-making process.

6.3. Transparency, Consistency and Independence

Kaiko Indices is committed to transparently communicating all major decisions related to index calculation and administration, ensuring that stakeholders receive timely and non-selective disclosure of relevant information. To maintain alignment with market needs, Kaiko Indices actively seeks feedback from users and stakeholders and will conduct regular consultations whenever methodology changes are under consideration.

7. Kaiko Safello Staked Indices

7.1. Kaiko Safello Staked Bittensor Index

The Kaiko Safello Staked Bittensor Index is published daily at 4PM London time. The pricing data is the Kaiko TAO Reference rate, based on a Volume-Weighted Median (VWM) plus a Time-Weighted Average Price (TWAP) methodology.
The staking APR data is computed daily as weighted average APR of root TAO validators.

Construction:

- **Price data:** Kaiko TAO Reference Rate, computed daily at 4 PM London time (KK_RFR_TAOUSD_LDNLF).
- **Staking APR data:** Kaiko TAO staking rate, computed daily as weighted average APR of root TAO validators.
- **Currency:** USD
- **Utilization rate:** 90%
- **Unstaking period:** no unstaking
- **Rebalancing:** Monthly on the last business day of the month.
- **Base value:** Value of TAO at base date, multiplied by M.
- **Multiplier M:** 1
- **Decimal digits:** 2

Dissemination:

- **Calculation:** Daily at 4 PM London time
- **Publication:** Daily at 4:15 PM London time
- **Base date:** 2025-08-01
- **Launch date:** 2025-10-17

Identifiers:

- **Full name:** Kaiko Safello Staked Bittensor Index
- **Ticker:** KSSTAO
- **ISIN:** FR0014013D10
- **Bloomberg:** KSSTAO
- **API identifier:** ks-stao-1-d

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Pic. 1 – Caption goes here, source

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